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Knowledge Management Trends in the Digital Economy Age

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Abstract: The relevance of the chosen topic of the article is determined by the fact that in the contemporary digital economy, society is growing increasingly reliant on information technologies, efficient data management and the necessity to transform knowledge management. The aim of the article is to study and substantiate the importance of transforming knowledge management to make it responsive to the volatile digital economy, highlight knowledge as a factor in the development of management systems in the digital economy, elaborate on the information technology capacity in knowledge management, and analyze the knowledge management models applicable in the digital economy. The article analyzes the preconditions of an effective knowledge management model for the development of the quality management system and digital economy. It also studies the concept of the digital economy, and defines the role of human resources in digitalization. We have examined the prerequisites for knowledge management, relationships between human resources management processes, quality management systems and information technologies with the purpose of building an efficient quality management system inside an organization. At the present stage, information technologies are developing rapidly and their management requires continuous education and self-development. Thus, one of the priority tasks of economic development is the professional application of computer technology in all fields of activity. The formation of the computer literacy skill set of the general public will become an indicator of the readiness of society to comply with the up-to-date requirements.

Keywords: *Digitalization, information technology, management, research methods, management model.*

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Introduction

As our life is growing faster and all the processes are becoming more simplified, there cannot be a doubt that the digital economy has become the global trend of human development. The world is becoming progressively hybrid, our daily life and digital technologies are becoming mutually integrated. Universal digitalization requires the relevant infrastructure and knowledge for its application, therefore, knowledge is becoming a key value and a driver of development in advanced enterprises. Companies that effectively apply knowledge in their work not only demonstrate rapid growth and enjoy ample opportunities for business expansion (opening branches, developing franchise networks) but also create opportunities themselves.

Thus, knowledge management mechanisms are a relevant research topic. Nowadays, there are scientific studies that are devoted to the need to study and explain the importance of using knowledge management transformation in the digital economy. The issue of knowledge management and digitization has been explored by Borian (2009), who argued that computer literacy is the foundation of the information culture of today's society. Bocharova (2019) provides a detailed description of the development of national economy innovation infrastructure in theory and practice. According to Zakhartchyn (2021), knowledge management has a special role in the context of the digital economy and the intellectualization of society. More insights on transformations of knowledge management in the digital economy can be found in the works by Pohjola (2002).

Computer literacy is catching up with the improvement of computer technology, combining knowledge of theory and practice in the field of computer systems with knowledge of information technology, readiness to use professional programs in various fields. The importance of computer literacy for every individual today can no longer be questioned.

Knowledge as a factor of management system development in the digital economy

The function of knowledge management depends on three factors: the availability of resources, employee relationships and consistency of approach. Unfortunately, many knowledge management projects are a pure formality because of the misunderstanding or disregard of these factors.

The research methodology is represented by the analysis of Ukrainian and international developments in knowledge management and

quality management systems, their systematization and synthesis into a single model of interaction inside an organization.

The digital economy is associated with the type of economic activity that places a high value on knowledge, information and technology, whereas the advancement of information and communication technologies further promote the robotization of routine tasks, Shakhno,(2016).

In the today's economic dictionary, the new economy is interpreted in terms of the development of innovative technologies in all sectors of the economy. They are developing through the intellectual component, deploying cutting-edge technologies and solutions. In these conditions, knowledge management is a new look at management methods, organizational mechanisms and management techniques that affect the competitive advantages of enterprises.

The knowledge economy is aimed at the accumulation of intellectual capital and distribution of knowledge in various forms, such as competencies necessary for the development of innovation, high-tech products, and highly qualified services that promote the development of industries and other economic processes (Nerubasska & Maksymchuk, 2020; Nerubasska, Palshkov, & Maksymchuk, 2020). The main task of the knowledge economy is not only the development and production of high-tech products but also its use across industries (Pisarenko, Kvasha, Rozhkova, & Kovalenko, 2020).

Today, we witness a swift development of information technology, and its management requires continuous education and self-development. Thus, one of the priorities of economic development is the professional application of computer technologies across various industries, Lodovici (2021).

The formation of computer literacy skills with all segments of the population will serve as an indicator of social progress in general.

Computer literacy as a set of applied skills keeps advancing with the continuous improvement of computer technology, combining theory and practice in the field of computer systems with knowledge of information technology, ability to use professional programs for acceleration and optimization of operational activity in various fields. To stay competitive in the job market, people need computer literacy skills.

It seems logical to assume that digitalization of the company operations depends directly on the company budget, that is why targeted funding of state projects significantly accelerates the development of certain industries embraced by the target program. Moreover, it also touches upon

and benefits the development of the related medium and small businesses and startups.

Digitalization occurs with the use of digital technologies in the practice of economic entities.

The key technologies of the digital economy are:

- cognitive technologies;
- cloud technologies;
- Internet of Things;
- big data;
- virtual currencies (Gitelman, Kozhevnikov, & Sandler, 2016).

Lodovici (2021) believes that digitalization and building a digital economy are interrelated concepts. They both need appropriate infrastructure and information and communication technologies, where digitalization would serve as a tool and precondition for the development of the digital economy. The latter entails new forms of governance and economic relations, with freelance work being one of the most relatable and indicative at the same time. The growing popularity of freelance format calls for a revision of the national tax system and legal framework since, as of today, a freelancer is not employed under current law and does not tend to declare their income, while the employer saves on social benefits and the employee's workplace arrangement but risks getting disappointing work results.

Thus, it becomes obvious that the building of the digital economy (knowledge economy) is a process of a systemic nature, which entails changes in all spheres of society, and above all, changes in the work of economic entities.

The most important factor in the development of the digital economy is human capital. The level of education of the general population is growing every day. The active pace of globalization allows people from different countries to join the cloud economy, which is today often referred to as the human cloud. Today, people increasingly participate in social, economic and political processes, facilitating global collaboration and global competition. Knowledge and efficiency of its application become a key factor in the success of individual professionals and entire companies, Kurt (2018).

Knowledge is the driving force behind the digital economy development. It is the human capital and a source of innovation, development, and applied research.

According to a simple classification by Zakhartchyn (2021), there are four types of knowledge:

1) "know what": knowledge as a set of facts (here the concept is close to data, it is easily digitized and processed without human intervention);

2) "know why": scientific knowledge for further development and innovation;

3) "know how": a set of skills and abilities;

4) "know who": identification of the owner of knowledge, expert, Khrystenko (2017).

Knowledge management implies the following processes:

1) generation of new knowledge;

2) ensuring access to new knowledge outside the organization;

3) use of available knowledge for decision-making;

4) implementation of knowledge (processes, products, services);

5) presentation of knowledge (documents, databases, software);

6) stimulating the growth of knowledge in the form of organizational culture and incentives;

7) transfer of existing knowledge from one part of the organization to another;

8) evaluation of intellectual assets and the impact of knowledge management on business results (Petana & Rosa, 1955)

Knowledge is a product of the research of several scientific directions: economics, psychology, management, and information technology. The versatility of the subject requires detailed analysis and synthesis because it forms hybrid approaches combining the capabilities of information technology, psychological aspects and management objectives.

In today's digital economy, the development of knowledge management becomes a strategic task of any organization. At the same time, the development of the knowledge management process leads to continuous improvement of all business processes of the organization, including information technology, personnel management and quality management system (Kuwayama, Ueki, & Tsuji, 2005).

The effectiveness of knowledge management has been proved to affect the general financial performance of the company, the quality of products and processes, competitiveness and its sustainable development prospects. For the effective application of the digital economy to benefit businesses, the author identifies two important prerequisites:

1) infrastructure (digital platforms and technologies development);

2) regulatory (development of relevant rules and procedures).

The first prerequisite depends on how well information and communication technologies are designed and implemented in the enterprise, while the second is related to personnel management and, in particular, knowledge management (Penkova & Koroliova, 2020).

Information technology opens the following opportunities for the development of knowledge management:

1) digitization of knowledge bases;
2) calculation of large amounts of data;
3) various communication channels.

Knowledge management models in the digital economy

The unfolding of the digital economy that penetrates all the domains of human life calls for efficient data handling that would indicate the advanced level of the creative potential of the human personality as a carrier and generator of knowledge.

In these circumstances, human capital becomes an undisputed resource. As the share of employees involved in intellectual tasks is increasing, the content of labor acquires mental, intellectual significance (Pisarenko, Kvasha, Rozhkova, & Kovalenko, 2020).

Businesses choose their model of knowledge management in accordance with the scale of their production and the nature of the operation preconditioned by the existing organizational culture. In the knowledge economy, the competitive capacity of an enterprise is determined by its ability to create, process, and distribute knowledge and information both externally and internally, as well as to protect ideas from competitors. Thus, the "new knowledge" drives changes in the economy, as well as a time lag between the emergence of new knowledge and its use.

There are various models of knowledge management in the digital economy to smoothen, adjust, and align these processes. This model builds the individual elements of the knowledge management system into a single process with stages of acquisition, to stages of recognition and use, Zakharov (2020).

The first stage is relevant when the organization aims to change the thinking of the team, acquire new knowledge, interpret existing knowledge and deploy information to reach a better and more competitive level of economic activity through a set of scientific data and expertise that depends on the interaction between the internal and external environment.

In this case, the simplest and most effective would be such a technique as benchmarking. Using benchmarking allows businesses to find out what management methods or production technologies need to be studied and implemented in the company to reach the most competitive level, Pishchulina (2020).

The second stage is the management of knowledge carriers and information resources. It enables the restructuring of the knowledge obtained and defining its designation in the production or operational business process. The use of current technologies to access new information allows providing the interested departments with access to new knowledge. At this stage, the use of a storytelling technique will be effective. This technique represents a current system of intellectual knowledge and emotional experience through all kinds of information and is based on the art of ancient experience of storytelling. Storytelling connects with the parts of people that other communications can't reach. The proven way to engage, excite and educate people about technology is to make it meaningful to them.

Thus, the concept of storytelling is a technique for information transfer created by management for a specific task with the participation of personnel management.

Knowledge supply management is the third stage, which provides the basis for new knowledge about the formation of a new product or service. In other words, it is either a successful or failed adaptation of knowledge with the purpose of solving a specific problem of the enterprise. Thus, a supply of knowledge is created. This stage can be complemented by "Mind Manager" commercial software (MM) that allows creating memory cards, recording presentations, negotiations, meetings, compiling research and operating large amounts of data, Garfield (1955).

Basically, it provides ways for users to visualize information in mind maps and flowcharts. Among the most popular Mind Manager features there are:

- search, analysis and conversion of information from various sources;

- automation of business processes that enables making decisions in the shortest possible time;

- generation of information and its effective communication to employees involved in the project.

The fourth stage characterizes the management of knowledge demand, whereby the range of problems and the bank of new knowledge are analyzed.

Comparison of demand and supply of knowledge allows identifying the shortage of knowledge in the enterprise (Kenan & Athena, 2020).

Knowledge processing infrastructure management, as well as the management of data and communication, represent the fifth stage. So, this stage is possible when a company has an infrastructure for processing knowledge, information and effective communication, so that the company can enjoy the feasible influx and progress of ideas. Knowledge processing infrastructure should include current technologies of information processing and exchange, and continuous stimulation, which promotes involvement and motivation of the whole team, improves morals, boosts employees' self-esteem, reduces staff turnover and creates an atmosphere of education and competence in the company.

Of course, a dramatic transition to a change in the consciousness of the team may meet resistance from employees. To adopt the changes and preserve the healthy atmosphere in the company, businesses are sometimes recommended to use the Kaizen system. Kaizen is known to be more than a method but rather a philosophy. According to this philosophy, continuous improvement should occur in all processes in the company, and improvements must be made daily. The implementation of this system will be effective if all the company's staff is involved and focused on the tasks performed.

Kaizen approach shapes employees' attitudes with a focus on the continuity of this process since kaizen is primarily not about problem-solving but about continuous improvement, which means adopting a proactive rather than a reactive approach. The application of this system requires appropriate management, aimed at focusing and supporting the desire of all employees of the company to improve with the possibility of adjusting their efforts in this direction, Sisson (2016).

A study of national standards and domestic developments has shown that to date there is no precise definition of the area or domain of application in knowledge management research: it can be implemented by both the personnel department within the scope of its needs and the quality department (to meet the requirements of the quality management system), or knowledge manager or a corporate university. One way or another, the system does not reflect the needs of all stakeholders and is most often

compartmentalized within specific departments and designated budgets, that is why it is often applied in a rather formal way.

Currently, the standard provides for the creation of a knowledge management system according to the following algorithm:

1) knowledge management project development;
2) project evaluation;
3) system development;
4) deployment;
5) assessment;
6) stability, Skyrme (2014).

This approach is consistent with the concept of total quality management and involves continuous improvement. Therefore, it seems reasonable to develop knowledge management on the basis of the quality management system of the organization.

Conclusion

The current article has analyzed the prerequisites of the effective knowledge management model for the development of quality management systems and the digital economy on the whole. We have studied the concept of digital economy and determined the role of human resources in the process of digitalization as well as knowledge management conditions, interrelations with the processes of personnel management, quality management and information technology for the development of quality management systems.

It is proved that the problem of knowledge management and digitalization is presented in the works by Borian (2009), where the author argues that computer literacy is the basis of the information culture of modern man; Bocharova (2019), who describes in detail the development of innovation infrastructure of the national economy; Zakhartchyn (2021), who sees a special role in knowledge management within the context of digital economy and intellectualization of society; Pohjola (2002), who covered the transformation of knowledge management in the digital economy.

The knowledge management transformation in the digital economy defines new models of technology and data management as the factor of business success, allowing businesses to quickly respond to rapidly changing external circumstances and adjust to them to ensure sustainable development on the level of both an enterprise and the entire economy of the country. New knowledge empowers professionals by boosting their

competitive capacity, helping win jobs, enhancing financial stability and promoting the human capital in terms of the international market.

The program of digital economy development will prove to be effective on condition the state, science, education and business all work together, allowing to realize the potential offered by the new technological world. Digitalization will eventually lead to the emergence of new markets that are predominantly networked and target people as end-users.

Knowledge management inside an organization has to bear a systemic character enabling synergy of different functional departments while separate processes are to be built according to the Plan-Do-Check-Act approach. Hence, the need to create a knowledge management system of the organization. It is inseparable from other management systems, while its processes affect personnel management, information security and other areas.

This system does not require certification of conformity, but its development and maintenance are necessary for an effective quality management system.

Process standards specify the tasks of management and identify their impact on quality. Moreover, they reveal the need for cooperation of different departments to perform tasks of effective employee knowledge management.

Knowledge management systems have three stages of development: information technology, human resources and corporate culture, and systematics and content management. The final, third stage, integrates the quality management system, which allows supervising the way the requirements are fulfilled regarding the set of knowledge expected from certain employees. The interpersonal relationship is to be supervised no less effectively for the efficient exchange of knowledge.

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